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VII.—*Contributions to the Knowledge of New Guinea.* By
Dr. SALOMON MÜLLER.

Translated from the Dutch by JOHN YEATS, Esq., F.R.G.S.

Read, March 22, 1858.

THERE are few islands of any extent or importance between the tropics and the temperate zones that have been so seldom visited and scientifically examined by Europeans as Papua or New Guinea. This is the more remarkable when we remember that the place was early discovered, and is, moreover, situated close to the Moluccas, which, on account of their valuable products, have attracted the attention of every maritime power.

Our knowledge of the south and south-west coasts in particular is very limited; any approach to the former of these being dangerous in the highest degree from the numerous coral reefs and sandbanks that obstruct the northern shores of Australia.

In 1826 the Dutch brig *Dourga*, under command of Lieutenant Kolff, was sent thither to investigate part of the coast, and also to make inquiry into the condition of the inhabitants. Steering from Amboyna to the south-westerly promontory of New Guinea, Heer Kolff discovered, about 24 geographical miles north of False Cape, a wide opening which appeared to be the mouth of a river, and to which he gave the name of his vessel; he afterwards kept a north-west course until he came to the small island of Lokahia, $134^{\circ} 50'$ E. of Greenwich. From Lokahia he departed to the Tenimber Islands, after having lost one of his crew in an affray with the natives.

In the beginning of 1828 two new war-ships were sent out to the south-west coast of New Guinea by the Dutch administration of India, namely, the corvette *Triton*, and the colonial schooner *Iris*. Five scientific men accompanied the expedition, and from their reports collectively, the sole survivor, Dr. S. Müller, has drawn up his narrative.

“Despatched to examine the coast and select a place suitable for a settlement, we came at the end of the month of May before the broad opening of the so-named Dourga River. After proceeding up it for some days in an easterly direction, the uncertainty of this course, together with a threatened scarcity of fresh water, induced us to prefer the sea again and view the shore more northwards. We found some opportunities for intercourse with the inhabitants, and also for examination of the country. The discovery of a deep and spacious bay, lat. $3^{\circ} 45'$ s., and long. $134^{\circ} 15'$ E., with lofty picturesque coasts, determined our choice of a site for the little fort which was built here, and named Fort Du Bus, in honour of the Dutch Commissary-General for India.

“The death of twenty of the ships’ crews, and the sickness of upwards of sixty others, made further research impracticable, but the vessels which afterwards carried provisions to the fort once or twice a year made additional discoveries. In April, 1835, Heer Langenberg Kool, commander of the war-schooner *Postillon*, sailed through the supposed river Dourga, and proved it to be a strait; it was named by him Princess Marianne Strait, and the island to the west of it Prince Frederic Henry Island.

“The physical condition of the coast on the south and south-west sides of New Guinea, investigated by the *Triton* and *Iris*, is very varied. From east longitude $132^{\circ} 30'$, or perhaps a little less east, to about $135^{\circ} 30'$, there are high cliffs. Only here and there are levels to be seen, principally within the numerous bays, while in other places the rocks rise perpendicularly from the sea, particularly about the headlands. Near the last-mentioned degree of longitude the rocks retire gradually southwards from the shore, so that in this direction an extensive level border is visible, which stretches away in one vast wilderness to Torres Straits. As far as the eye can reach there is not the slightest trace of elevation in the ground between the two most southerly degrees of latitude; but in latitude $5\frac{1}{2}^{\circ}$ about, in clear weather, and far inland, there rises a lofty mountain-chain which opens out the farther we go north (about $4\frac{1}{2}^{\circ}$) and then presents an uncommonly bold aspect. Some of the summits seem to be raised above the limits even of perpetual snow; at least we are at a loss how otherwise to account for the shining white layers that covered the highest peaks and surfaces. During the day little was to be seen of the chain, as thick clouds commonly shrouded it; but early in the morning, just before or after sunrise, it displayed itself in all its immensity along a vast extent of country. Its chief direction appeared to be nearly east and west, so that between the 135th and 136th degrees of east longitude it comes very near to the smaller chains which thence hem the coast-line northwards. These last, therefore, follow the south-easterly and north-westerly direction of the island. Very remarkable, however, is the difference that exists between these distinct mountain-ranges. The chain lying far inland exhibits in general softly-swelling outlines. Among the high projecting summits a number of broad flat crowns particularly arrest attention: extensive plateaux probably, which, judging from their situation, must be surrounded partly by a temperate, partly by a cold climate. The more northerly coast elevations, on the contrary, are almost everywhere rude and craggy in form, not unfrequently resembling tall turrets and fractured battlements. In general the chain on this part of the coast is only of moderate elevation. That which stretches along the shore seems nowhere to exceed a thousand mètres (3280·89 feet) in

height; in most places where we saw it, it does not rise above two or three hundred mètres (600 to 1000 feet). But the mountain Lamantsjieri, one of the principal crowns of the chain, is according to trigonometrical measurement 750·39 mètres high (2460·67 feet). This lies in the background of the bend Oeroe Langoeroe, or Triton Bay, in 3·39 south latitude.

“The islands along the coast we examined are in general of the same nature as the solid wall in the neighbourhood of which they are found: where it is low, they are so too; where it is high, they are equally so. We found the greatest number of islands under the high coast. On the whole they agreed with this latter both in external form and internal constitution, and were separated from it by straits or channels more or less broad. Their banks are mostly steep as unbroken walls, and, where damaged by the heavy current, are commonly much undermined, and perforated above water. Within the bays and coves that are found along the coast at intervals are small sandy patches peopled by the half-nomadic Papuans.

“In the straits alluded to, also along the remaining part of the high coast, the navigable water, as far as known to us, is pure and very deep; so much so that on board the *Triton*, while cruising in these straits, ground was seldom reached at a depth of from fifty to ninety fathoms, even when we were not more than a cable's length from shore.

“Farther to the south, on the contrary, where the coast is low and flat, a ship of moderate dimensions cannot approach within a mile, or even two, without the greatest precaution and constant use of the lead. It is only in a few places that the bottom exhibits a marked declivity. Islands are seldom seen along that southern part, but sandbanks are observed both above and below the surface.

“Among the numerous river-mouths on the coast, some are of considerable breadth. Of course the origin of several of the streams must be sought for far inland, as in the southern portion of New Guinea the waterparting lies at a great distance from the west coast. The only river examined by us in these parts, the Oetanata, is about one-fifth of a mile broad at its outlet, while its depth varies from four and five to six and seven fathoms. Not very far up it splits into three small arms, named Toega, Wakia, and Baai. By the sea-side its banks are dry and sandy, but inland the above-named sections wind through a marshy soil, consisting of clay mixed with loam. As far as we know, the *Triton* and the *Iris* were the first ships that ever sailed into the Princess Marianne Strait from the north; their failure led to the later expedition of Heer Langenberg Kool, which was entirely successful. The strait is upwards of two geographical miles wide at its northerly

entrance, but becomes gradually narrower inland, so that about the middle it is only a quarter, and a little farther south but a sixth of a mile broad; farther in towards the opening on the south it widens again to the breadth of about half a mile. Its depth, reckoning from low-water level, is from four to upwards of ten fathoms: at the southern outlet only Heer Langenberg Kool found it diminished to scarcely two fathoms; within the strait it commonly increased from the shores towards the middle. Along the whole of the passage the banks are low and mostly marshy, though here and there slips of land appear above water drier in their nature. One uniform forest is seen everywhere, containing no very heavy timber on the coasts, but inland many thick trees. Here and there this wilderness is skirted by a slip of soft clay-land; along the whole strait the bottom is generally soft, except at the southern outlet, where the ground is hard.

“This mouth is probably the same that is marked on some maps as ‘Bartholomew’ River. The banks of the strait may be approached closely almost anywhere, and with the more safety as the depth increases and decreases regularly with but very few exceptions.

“There are mouths of small streams to be met with in abundance on both banks, some of which during the ebb tide yield good drinking water, but as the flood rises they become brackish. Those which were closely examined by Heer Langenberg Kool were found deep enough at low water to allow a laden bark to pass in and out. The schooners *Postillon* and *Sireen* filled their tanks from the most northerly of the two creeks that empty themselves at but a short distance apart, not far to the south-west of the only little island that there is in the strait. Anchorage for this purpose may be found close under the wall. This finding of soft water is under all circumstances important to navigation; it would have relieved the corvette *Triton* from great embarrassment, and might have contributed much towards the attainment of the objects of the expedition. From this point of view especially, and also for facilities in refitting, the discovery of this strait is valuable; though its situation, the strong currents running through it, the narrowness of the passage, and the inhospitality of the whole region, will never allow it to be of general or wide-spread utility.

“The ground in the flat district comprising the south-western promontory of New Guinea, as far as the coast-chain which may be said to end at $135^{\circ} 30'$ E. of the meridian of Greenwich, consists of a bluish-gray clay, that is mixed, according to the observations of M. Macklot, in some places with pieces of quartz, in others with limestone. Where the land is not laid under water by the tide, this clay is firm and covered with a thin crust of loam; but where it is daily washed by the sea-water, it is soft and muddy. There also occur in the first-named drier part which stretches

eastward from $135^{\circ} 30'$ to $138^{\circ} 30'$, in many places along the coast, strips of white sand mixed with much quartz. The mountains that form the more northern shore are characterised, as we have already stated, by their rude outlines, in which angular sharp-edged crags with steep declivities alternate with deep and narrow clefts and caverns, or naked walls of rock; while the rest, where the situation is not unfavourable to accumulations of matter, are covered with a layer more or less thick of vegetable earth. According to Professor von Leonhard of Heidelberg, who has inspected some of the specimens from our collections of stones, the mountains consist of a Jurassic limestone formation (oolitic series of English geologists), and their higher parts of a very characteristic dolomite of the same age. This last exhibits in many places naked walls of a glistening white colour. In the subjacent brownish-gray dull-looking limestone, fossil shells are frequently enclosed; and in one place M. Macklot found a fossil vertebra, probably belonging to a great saurian. Farther inland there must be mountains which contain extensive layers of clay, because not only the beds of the rivers, but also the bottom of the sea in the neighbourhood of the mouths of the rivers, consist of clay. Hard pieces of this substance, from the river Timbona, which flows through the valley between the mountains Lamantsjeri and Oriori, have great resemblance, in the opinion of Professor von Leonhard, to certain strata of the tertiary formation called Tegel, which occurs at Vienna. The small bands which are met with here and there in the clefts, and within the curves and bays along the sea-coast, consist either of quartz or limestone, or of a sand of powdered white and red coral.

“To add to this geological sketch of the south-west coast of New Guinea, all that is known to us of the mineral kingdom, we remark that we found amongst the natives on the river Oetanata, large cylindrical pieces of light gray sandstone: fragments which, according to the report of the natives, had been brought from the interior. They use them as well for grindstones as for ballast in their canoes.

“Further, we obtained by barter a few clubs having their upper extremities furnished with an artistically-wrought stone, consisting of a ringing, hard, and very fine granular hornstone of a greenish-blue colour. These stones were partly of the common hatchet shape, like many of those found in the South-Sea Islands; others were of an angular star-shaped figure. In the Princess Marianne Strait were found at intervals along the banks volcanic matter of a light and porous nature. It had probably been transported from a distance and deposited by the stream. We saw sand washed up in a few places only, but where the banks of the strait are elevated beyond the ordinary level of the tide, and therefore have a

less marshy nature, we obtained pieces of the German *Rasen-Eisenstein* or *Sumpferz* (clay iron-stone), together with the iron-ore *Bohnerz*, or bog-iron.

“With regard to the growth of plants on the west coast of New Guinea, it may be said first, that in general, as far as we have seen the country, it is everywhere a wilderness, and overrun with wood. The flat parts particularly exhibit an unbroken green carpet, which does not appear to have a single unfruitful or bare place in it. Alternations of this last-named character are perceived first on the high mountainous coast, along the declivities of which groups of lofty trees luxuriate by steep precipices, and where the rude crag with its naked sides obtrudes amongst shrubs and bushes and creeping plants. To give an idea of the prevailing characteristics of the vegetable kingdom, according to the reports of my colleague Zippelius, and the kind assistance rendered by Professor Blume,—the woods along the coasts of the Princess Marianne Strait consist chiefly of *Rhizophoræ*, *Bruguieræ*, *Avicennia*, *Petalomæ*, *Sonneratiæ*, *Heritieræ*, *Ægicereæ*, *Memecyleæ*, and similar ones. In places where the ground is a little higher and less marshy, figs show themselves, *Mimosæ*, and representatives of the classes *Fagræa*, *Clerodendrum*, *Carissa*, *Aralia*, *Melanthesa*, and other *Euphorbiaceæ*; while in a few more open spots along the sides partly covered with *Saccharum Koenigii*, the fan-palm may be seen, and a number of the low, crooked stems of *Paritium Tiliaceum*. From the tough bark-fibres of these last, the natives, like the islanders of the great Pacific Ocean, and of the Indian Archipelago, prepare thin cords and all sorts of bands, which, plaited or worked into nets, serve for ornaments and other purposes. In the neighbourhood of the river Oetanata are to be observed along the white sandy shore, whole woods of the club-tree (*Casuarina equisetifolia*), besides fig-trees, and not a few species from the genera *Ægiceras*, *Xylocarpus*, *Salacia*, *Olax*, *Canthium*, *Scyphiphora*, &c.

“Let us now glance at the animal kingdom of the country we are considering. Very remarkable is the want of mammalia in New Guinea. Not more than six species of this class were noticed by us, which all belonged to the family of the *Marsupialia*. Three of these were unknown, and consisted of a little carnivorous pouched animal of the race *Phascogale*, and two kangaroos, which differ very characteristically from all others of the class hitherto described, in that they live upon trees. For this reason, as well as for other physical distinctions, we have formed them into a new group, under the name *Dendrolagus*. The other sorts obtained by us were the species already mentioned by Valentyn, *Pelandok* (*Dorcopsis Brunii*), a young specimen of *Petaurus sciureus*, and a few of the *Phalangista maculata*.

“Less poor is New Guinea in birds: indeed in this point it may vie with the most favourably situated of the Indian islands. At the end of the voyage, and of a three months' stay on the coast, our collection was composed of 119 varieties, belonging to 60 different kinds. The great groups of the Passerini, Scansores, and Gallinacei, were most numerous represented by the so-termed insect-eaters, the parrots, and the pigeons. Next to these came a few species out of the families Conirostres, Tenuirostres, Syndactyli, Amphiboli, and Hiantes. Of the water-birds we had the Natatores and the Grallatores chiefly. As to those met with in the Princess Marianne Strait, only the *Columba Mülleri* and the *Humeralis* deserve especial mention.

“A very large duck, quite strange to me, was shot with ball, and rather roughly used, so that it was thrown aside as unserviceable, under the firm expectation that we should soon secure another specimen. To my great regret, however, we were disappointed, for we never saw the species again. In the wood along the banks of this strait, and also in the neighbourhood of the outlets of the river Oetanata, we often found great heaps made of earth and dry leaves, which, in the opinion of our Ambonian guides, were the nests of the Maleo (*Megapodii*). Some of these heaps excited our amazement, considered as the nests of gallinaeous birds, on account of their prodigious size. One of them, by my own measurement, was at the base 8 mètres (26 ft.) in circumference, and $2\frac{1}{2}$ in height. The form was that of a cone flattened at the extremities. No trace of an opening could be perceived to this or to others that came under my notice.

“Of the Amphibia we obtained on the west coast of New Guinea 26 sorts: 15 of the Lizard family, 5 of the Serpent, 1 of the Tortoise, and the remaining 5 of the Frog tribe. Nearly all are unknown, or but newly described from our specimens.

“The fishes that we obtained at different places along the southwest coast of New Guinea were principally of the genera *Squalus*, *Pristis*, *Raja*, *Scomber*, *Sparus*, *Mugil*, *Polynemus*, *Clupea*, *Trichiurus*, *Triacanthus*, *Belone*, and others. Of the *Trichiurus haumela* there were more taken than of any other kind. In the Princess Marianne Strait, at low water, we saw the dry muddy shores strewn with *Periophthalmus Schlosseri*. Objects from two inches to nearly a foot in length crept, sprang, or displayed themselves—the body raised somewhat in front—as if in a sedate, almost sitting posture; the eyes like little horns or ears pricking up, stiffly standing out above the head, and looking round with earnestness and attention. Nothing so curious, one might say so comical, as the positions and movements, the peeping and staring, of this mud-loving fish. Observed at a distance it is commonly stealing away over the soft ground, but no sooner is it aware of

danger than it stops, pricks up its head high in the air, and, should any one approach, takes flight by jumping or hopping into the water.

"The Mollusca we pass by to give a little more attention to climate, &c. The following is the result of our observations from May to September, on the south-west coast of New Guinea. During that time the weather was in general more windy and rainy than still and dry, particularly during the last months of our stay. The air was mostly heavy and misty, and therefore disagreeably damp. The mountains were almost always covered with clouds, and but seldom distinctly visible. A few fine days, with a pure serene atmosphere, were only to be regarded as exceptional. The consequence was, that the temperature during the day was generally moderate, and by night cool, at times sensibly cold. The warmth was inconvenient and oppressive only when for a time no clouds at all had intercepted the sunbeams.

"On the river Oetanata the centigrade thermometer stood in the middle of the month of June, in the morning just before sunrise, at 25° , = 77° F., at noon at 29° and $29^{\circ}5$, = 84° F., and towards evening, at sunset, at 26° to $26^{\circ}7$, = $78^{\circ}4$ F. Of thirty observations with the same thermometer made during July and August, in the bay of Oeroe Langoeroe, the mean temperature appears to have been—in the mornings, $27^{\circ}4$, = $81^{\circ}3$ F.; in the afternoon, 28° , = 82° F.; in the evenings after sunset, $26^{\circ}6$, = $79^{\circ}3$ F.: the highest and lowest ranges of the thermometer were observed on the 14th August at 1 o'clock at noon, when the mercury stood at $31^{\circ}2$, = $88^{\circ}1$ F.; and on the 3rd August, at 12 o'clock at noon, when it stood at 25° , = 77° F. During our stay in this bay frightful tempests more than once burst over the neighbourhood, discharging torrents of water, and being accompanied by heavy thunder and lightning.

"Lightning was indeed a very common phenomenon, occurring almost every evening in the northern as well as the southern districts. Earthquakes, according to the report of the natives, are seldom observed in the places inhabited near the shore, and never very severe. We experienced nothing of the kind during our cruise along the coast; once only, on the last of August, a few sailors of the corvette out in the woods thought they had perceived two slight shocks, and on the 1st of September, too, while we lay at anchor near a small island at the entrance of Triton Bay, there was an unusual shaking in the ship about four o'clock in the morning, without any one being able to account for it. The officers ascribed it to a marine convulsion.

"From our record of the winds it appears in general that along the south-west coast of New Guinea, with a waning moon, the south-east monsoon blows more southerly, even to south-west, and sometimes west; but with a moon waxing, on the contrary, it

turns more to the north, north-east, and north. When the heavy and long-continued rains that we had during the cruise are taken into account, the testimony of the natives seems to be confirmed, that along this part of the coast of New Guinea, just as in the Archipelago of the Moluccas, the south-east monsoon must be held to be the bad or rainy monsoon; the north-west, on the contrary, for the good or the dry monsoon. This state of the weather is thus the reverse of that which obtains on the great western isles of Sunda.

“The observations taken on board the *Triton* respecting the rise and fall of the tide, and the currents along the coast and from the land, furnish the following results:—In the Princess Marianne Strait a regular rising and falling of the water occurred, though once only in twenty-four hours, and making a difference generally of from $1\frac{1}{2}$ to $1\frac{3}{4}$ fathoms. From a series of careful observations made in the bay Oeroe Langoeroe, we learn that at full moon and new moon it is high-water there at 8 minutes past 1 at noon, and low-water at 21 minutes past 7 in the evening. The fall is then 2 mètres.

“This is, however, not the greatest difference between the rising and falling, for when the moon is in her quarters the difference amounts to 2:24. There is ebb twice in twenty-four hours, and flood twice; some irregularity may however be noticed, for occasionally high-water lasts an hour longer than low-water, and the reverse. The current observed along the coast took the same direction as the then prevailing wind; thus north-west, with a rate of about $\frac{3}{4}$ mile, excepting where interrupted by water flowing from the land, or by bends, banks, or islands. In the Princess Marianne Strait, where the course of the stream depends upon the curves in the banks, its speed was twice as great as in the sea, and therefore $1\frac{1}{2}$ miles.”

VIII.—*On the supposed Discovery, by Dr. E. K. Kane, U. S. N., of the North Coast of Greenland, and of an Open Polar Sea, &c.; as described in ‘Arctic Explorations in the years 1853, 1854, 1855.’* By Dr. HENRY RINK, M.D., Inspector in Greenland for the Danish Government.

Condensed from the Danish by Dr. SHAW.

Read, April 12, 1858.

THE author of the work above quoted, makes the following remark in the Introduction: “This book is not a record of scientific investigations;” and adds, that his aim has been to publish a narrative of the adventures of his fellow travellers, and that he has attempted very little else. Nevertheless, on perusing this